Please cancel claims 1-20 without prejudice or disclaimer.

REMARKS

Applicant thanks the Examiner for the careful and thorough analysis provided in the Office Action. However, reconsideration of this Application is respectfully requested.

New claims 21-53 are pending in the application (previous clams 1-20 having been cancelled), with claims 21, 22, 34, 44, and 47 being the independent claims.

Applicant asserts that the foregoing amendments introduce no new matter. Accordingly, entry of these amendments is respectfully requested.

At paragraph 5 of the Office Action, the Examiner requested amendment of the title to be more descriptive of the function of the invention as claimed. A more descriptive Title has been provided.

At paragraphs 6-9 of the Office Action, the Examiner requested amendment of the abstract to conform to proper length, language, and descriptive content. A more descriptive Abstract of the proper length, language, and content has been provided.

New claim 21 includes limitations (amended to overcome the Examiner's objections and selected rejections) corresponding to those of cancelled claims 1 and 6-13.

Claim Objections

At paragraphs 10a-10d of the Office Action, the Examiner objected to claims 1, 3, 11-14, and 19 due to certain informalities. The limitations of claims 1, 3, and 11-13, as included in new claim 21, have been amended as suggested by the Examiner in paragraphs 10a-10c.

Claim Rejections – 35 USC §112

At paragraphs 11-15 of the Office Action, the Examiner rejected claims 5, 7, 9, and 19 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitations of claims 5, 7, and 9, as included in new claim 21, have been amended to more particularly point out and distinctly claim the invention.

Claim Rejections – 35 USC §102

At paragraphs 16-20 of the Office Action, the Examiner rejected claims 1, and 15-16 as being anticipated by Chan et al., U.S. Patent No. 6,298,435. Although the limitations of claim 1 are included in new claim 21, further limitations (such as "argument binding ... during a call instruction") are not taught or suggested by Chan. Also see the following discussion regarding claim 10.

Claim Rejections – 35 USC §103

At paragraphs 21-52 of the Office Action, the Examiner rejected claims 2-9 and 17-20 as being unpatentable over Chan as applied to claims 1 and 6, and further in view of Yeager et al., U.S. Patent No. 5,758,112. The following discussion focuses on the rejection of claim 6, the limitations of which are included in new claim 21.

At paragraphs 33-34 of the Office Action, the Examiner rejected claim 6 as unpatentable over Chan in view of Yeager. Applicant has carefully considered the Examiner's statements, but respectfully disagrees. Claim 6 is reproduced herein:

> 6. The method, as recited in claim 1, further comprising designating a plurality of virtual registers of the plurality of virtual registers as virtual local registers.

The Examiner found "Yeager has taught that a subset of the virtual registers which reside in the mapping tables are saved on the branch stack," and further that "the logical destination registers

of the possible branch instructions are saved, which can be considered 'local' to each branch instruction." The Examiner further found "Because it is necessary to restore a precise state upon return from a branch instruction rather than an imprecise state so that processing results are correct, one of ordinary skill in the art would have found it obvious to modify the processor of Chan to designate a plurality of the virtual registers as 'local' so that the registers can be used to save and restore the state of branch instructions on a branch stack.", and therefore this comprises saving "virtual local registers" as recited in claim 6.

However, Yeager teaches that a "branch stack, coupled to the redundant mapping tables, updates restored mapping tables with changes made for preceding instructions that were decoded in parallel with the branch instruction." See Yeager, Abstract. The mappings saved correspond to destination registers for instructions decoded in parallel with the branch instruction, and as such are not related to the branch instruction itself: "That is, the destination registers of the four instructions decoded during the same cycle are saved in the branch stack." See Yeager, Col. 17 lines 37-38. Therefore the saved destination register mappings have no correspondence to the claimed virtual local registers: "Virtual registers VR6 through VR9 are the virtual local registers that can be temporarily saved and reallocated as private temporary registers for use by a subprogram." See ¶ [0136] of Applicants disclosure.

At paragraphs 53-60 of the Office Action, the Examiner rejected claims 10-14 as unpatentable over Chan in view of Yeager as applied to claims 1-9 and 17-20, and further in view of Yung et al., U.S. Patent No. 5,546,554. The following discussion focuses on the rejection of claims 10-13, the limitations of which are included in the new claim 21.

At paragraphs 54-56 of the Office Action, the Examiner rejected claim 10, as unpatentable over Chan in view of Yeager, and further in view of Yung. Applicant has carefully considered the Examiner's statements, but respectfully disagrees. Claim 10 is reproduced herein:

10. The method, as recited in claim 9, further comprising: binding a first virtual register of the plurality of virtual registers to a second virtual register of the plurality of virtual registers; and binding the status of the first virtual register to the second virtual register.

The Examiner found that "Yung has taught when a virtual register is a destination register of an instruction, a new mapping for the virtual register is created so that the original physical register corresponding to the original virtual register is not overwritten, effectively creating a new virtual register that is identical to the original virtual register except that it is mapped to a new physical register (see Col. 8 lines 10-40). Because having data overwritten can cause incorrect processing results which are unacceptable in a processor, one of ordinary skill in the art would have found it obvious to modify the process taught by Chan in view of Yeager to create a new mapping for a virtual register when it is the destination of an instruction, so that data in the physical register of the original mapping is not overwritten, thus avoiding potential incorrect results."

However, Yung teaches "The mapping unit 120 is responsible for mapping each virtual register address to a physical register address. In the system of the present invention, if the same identified virtual register address is the destination register address of different outstanding instructions, the mapping unit 120 will map a different physical register address to the same virtual register address for each use." (Yung, Col. 8 lines 16-22) and "For the virtual destination register address, the mapping unit generates a new mapping for the indicated virtual register address so that the physical register currently mapped to the virtual register will not be overwritten by the result of the instruction." (Yung, Col. 8 lines 36-40). Thus no new virtual register is created, only a new physical mapping for the same virtual register address.

Furthermore, the Applicant's "binding" includes: "If there is another argument, then for this next argument the virtual register to physical register mapping together with the status from specified non-global virtual register referenced by the argument is copied to the new VABR entry (step 1308). This copy process is binding the value or reference of the argument specified

by the calling program to the formal parameter of the subroutine as represented by the VABR." A VABR includes: "In the preferred embodiment of the invention, the instruction set architecture implemented by a system specifies that a formal parameter of a subroutine may be referenced by means of a dedicated virtual register address. Each virtual argument binding register (VABR) provides a means for a subroutine to reference such a formal parameter." See ¶ [0129] and ¶ [0117], respectively, of Applicants disclosure.

At paragraph 57 of the Office Action, the Examiner rejected claim 11, as unpatentable over Chan in view of Yeager and further in view of Yung. Applicant has carefully considered the Examiner's statements, but respectfully disagrees, for the reasons stated with regard to claim 10.

At paragraph 58 of the Office Action, the Examiner rejected claim 12, as unpatentable over Chan in view of Yeager and further in view of Yung. Applicant has carefully considered the Examiner's statements, but respectfully disagrees, for the reasons stated with regard to claim 6.

At paragraph 59 of the Office Action, the Examiner rejected claim 13, as unpatentable over Chain in view of Yeager and further in view of Yung. Applicant has carefully considered the Examiner's statements, but respectfully disagrees. Claim 13 is reproduced herein:

> 13. The method, as recited in claim 12, wherein the binding occurs during a call instruction, wherein the call instruction has at least one argument, wherein the first virtual register is used for the at least one argument.

The Examiner found that "Here, a branch instruction can be considered a 'call' instruction in that it executes code at a new location, and requires that an operand be supplied, generally via a

register, to provide an offset ... one of ordinary skill in the art would have found it obvious to consider a branch instruction as a call instruction."

Assume a branch instruction offset operand is provided via a register (Applicant invites the Examiner to more specifically identify a reference teaching this). The branch operand is a read-only operand used to determine the target address of the branch. However, the claimed call instruction argument is different. "Arguments for a subroutine are values or references that are passed between the subroutine and the program that calls the subroutine. If a subroutine is to use arguments, it specifies variables that will accept the values of the arguments. These variables are called the formal parameters of the subroutine. They behave like any other local variables inside the subroutine. When a subroutine is executed the formal parameters accept the values of the arguments." See ¶ [0006] of Applicant's disclosure. Thus applicants claimed "call instruction" "argument" has no correspondence to a branch instruction offset operand.

New Independent Claims – Discussion

New independent claim 21, as previously discussed, includes limitations corresponding to those of cancelled claims 1 and 6-13, as amended to overcome the Examiner's objections and selected rejections, and overcomes the Examiner's remaining rejections as described above.

New independent claims 22 and 34 also overcome the Examiner's remaining rejections in a manner similar to new claim 21. For example, limitations such as "binding an argument of the call instruction" and "copying a ... virtual register" distinguish over the provided references, as there is no corresponding teaching, as described previously.

New independent claims 44 and 47 also overcome the Examiner's remaining rejections in a manner similar to new claim 21. For example, the limitation "virtual local registers"

distinguishes over the provided references, as there is no corresponding teaching, as described previously.

It is believed that no new matter has been introduced via any of the amendments. Claims 21 through 53 are now pending in the application.

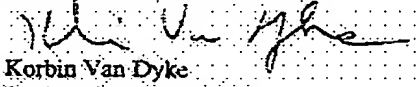
CLOSING

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all current outstanding objections and rejections, and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action, and, as such, all of the claims now pending in this application are believed by Applicant to be in condition for allowance. The issuance of a formal Notice of Allowability at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of the application, please telephone the undersigned at the number indicated below.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,



Korbin Van Dyke
Registration No. 52,313
Agent for Applicant

Korbin Van Dyke
Customer Number 42846
3343 Little Valley Rd
Sunol, CA 94586
(925) 862-0665 voice/FAX
EMAIL: xocoin@patentventures.com